

CO₂ capture and nutrients recycling using a patented algae system for bio-fertilizer production.

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biogas fuel cell



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COFERT consortium aims to have the representation of all the actors involved in the algae upstream and downstream. It means the algae production in algae ponds, the algae harvesting and drying and the processing of the algae through the extraction of high added value products out of the algae walls.

The project gathers a company dedicated to biogas with a special focus on biogas upgrading through algae production (BIOGAS FUEL CELL), an expert in the field of algae growing and harvesting (ALGAE FOOD & FUEL) and FEYECON, which has wide expertise in algae extraction and processing. As end-user and market launcher, SERVIMED ALMAZAN participates as a fertilizer manufacturer with a great interest in innovative and feasible technologies in this field.



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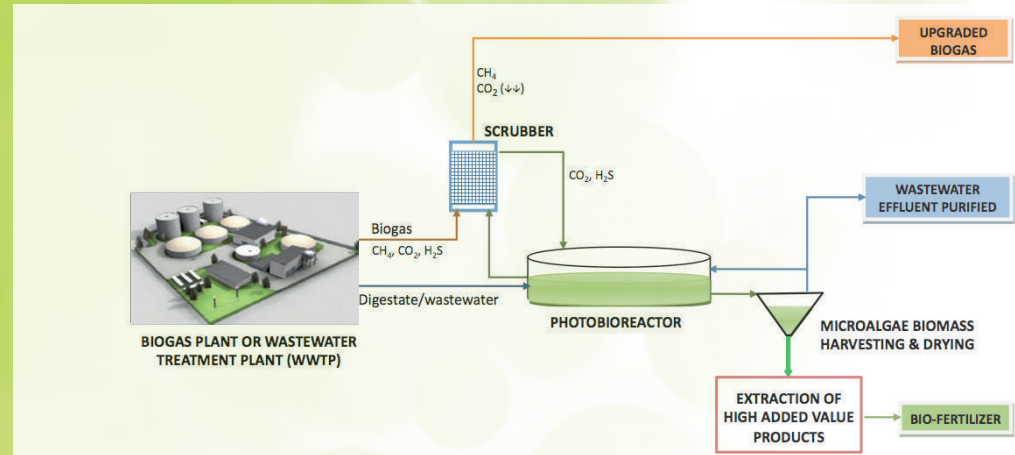


The process is based on the ability of microalgae to capture CO₂ via photosynthesis in the presence of sunlight in symbiosis with both a specific bacterial consortium capable of oxidizing H₂S (biogas contaminant) using the photosynthetically produced O₂ (BFC patented algae production system). In addition, the project includes the extraction of a plant hormone rich fraction from the algae biomass with the use of a green solvent. The remaining aqueous phase is collected as an enriched bio-fertilizer product.

Project aims at scaling-up a low-cost microalgae-based biotechnology for the optimum recovery of CO₂ from biogas and nutrients from digestate (liquid waste produced) for the production of a high value bio-fertilizer, clean water and an enriched methane gas. In addition, the system allows taking advantage of the oxygen excess produced during the process of carbon dioxide fixation, for the removing of hydrogen sulphide (H₂S) in the biogas.

Objectives:

- To scale-up a low-cost microalgae-based biotechnology for the optimum recovery of CO₂ from biogas plant
- To use the excess oxygen produced during the process of carbon dioxide fixation for removing the H₂S present in the biogas
- To recycle the CO₂ as a valuable algae biomass
- To enable water and nutrients recycling from the digestate produced in the biogas plant as by-product to grow the algae
- To reduce the energy consumption of the harvesting process
- To produce a valuable slow-release bio-fertilizer from the algae biomass



Expected Results:

- A low-cost alternative for biogas-conditioning process which allows using it in new applications
- A recycling CO₂ process in biogas plants for growing algae biomass in a zero emission process with no byproducts generation.
- Maximum utilization of the algae biomass as source of high value products and suitable recycling of resources (nutrients -N,P,K- and water)
- The production of a plant hormone and a bio-fertilizer from the algae biomass

